

CALIFORNIA INSTITUTE OF TECHNOLOGY

Division of the Humanities and Social Sciences
Pasadena, California 91125

THE INHERENT PREDICTABILITY OF LEGISLATIVE VOTES:
THE PERILS OF SUCCESSFUL PREDICTION

Herbert F. Weisberg
California Institute of Technology
Pasadena, California

Prepared for delivery at the Annual Meeting
of the Midwest Political Science Association,
April 29-May 1, 1976, Chicago, Illinois

THE INHERENT PREDICTABILITY OF LEGISLATIVE VOTES:

THE PERILS OF SUCCESSFUL PREDICTION

Herbert F. Weisberg

Social Science Working Paper

Number 121

April 1976

Most social science fields find prediction, even in the post-diction sense, to be very difficult. Predictive accuracy is generally low. Thus one would expect great enthusiasm once a field is able to move up to 80 - 90 percent correct prediction. This level has now been achieved in the legislative roll call analysis area. That would seem to suggest an important theoretical breakthrough has occurred in the area -- until it becomes apparent that this same level of predictive success has been achieved by several different and competing theories. How does one go about choosing between theories in such situations? Are statistical criteria irrelevant at this juncture? How is this uniformly high success to be explained?

An important possibility is that the behavior being predicted may be so inherently predictable that any reasonable model would achieve high accuracy. Dichotomous behavior can clearly be predicted by chance with considerable success. If one or two variables correlate highly with the behavior, then any model which explicitly or implicitly includes those variables would be guaranteed of confirmation. In such

situations it is critical to devise null models against which discriminating tests of success are possible. The statistical criterion shifts from predictive accuracy to improvement in prediction. Indeed the ultimate criterion might not be statistical but instead verisimilitude to the process being modeled.

A consideration of competing theories and competing criteria for theories would be incomplete without a specification of how a model of the behavior should be constructed. The existent theories each highlight part of a process, and it is possible to assemble them to spotlight more of the process. This is the goal of this paper, but it must properly follow the analysis of the current models.

SIMPLE NULL MODELS

The Majority Prediction

Dichotomous votes can be predicted with considerable success by a simple chance mechanism. If every bill received equal numbers of yes and no votes, one could achieve 50 percent prediction simply by always predicting an affirmative vote. Even if the vote totals were not all tied, at least 50 percent successful prediction would be expected on a chance basis.¹ That 50 percent is the obvious floor in predicting legislative votes. The models which have achieved 80 - 90 percent success have implicitly compared their success with that floor when claiming that their models have been vindicated by the analysis. Curve 1 of figure 1 plots the 50 percent floor against the vote proportion.

However, better null predictions are available. Chance prediction above 50 percent can be achieved if the vote totals are not all tied. Say that a motion receives p proportion of the votes. Randomly guess that p proportion of the legislators voted yes and the remainder no. If the predictions are independent, then p percent of the p proportion of yes votes will be correctly predicted and $(1 - p)$ percent of the $(1 - p)$ proportion of no votes will be correctly predicted. Thus the

level of predictive success will be $p^2 + (1 - p)^2 = 1 - 2p + 2p^2$.

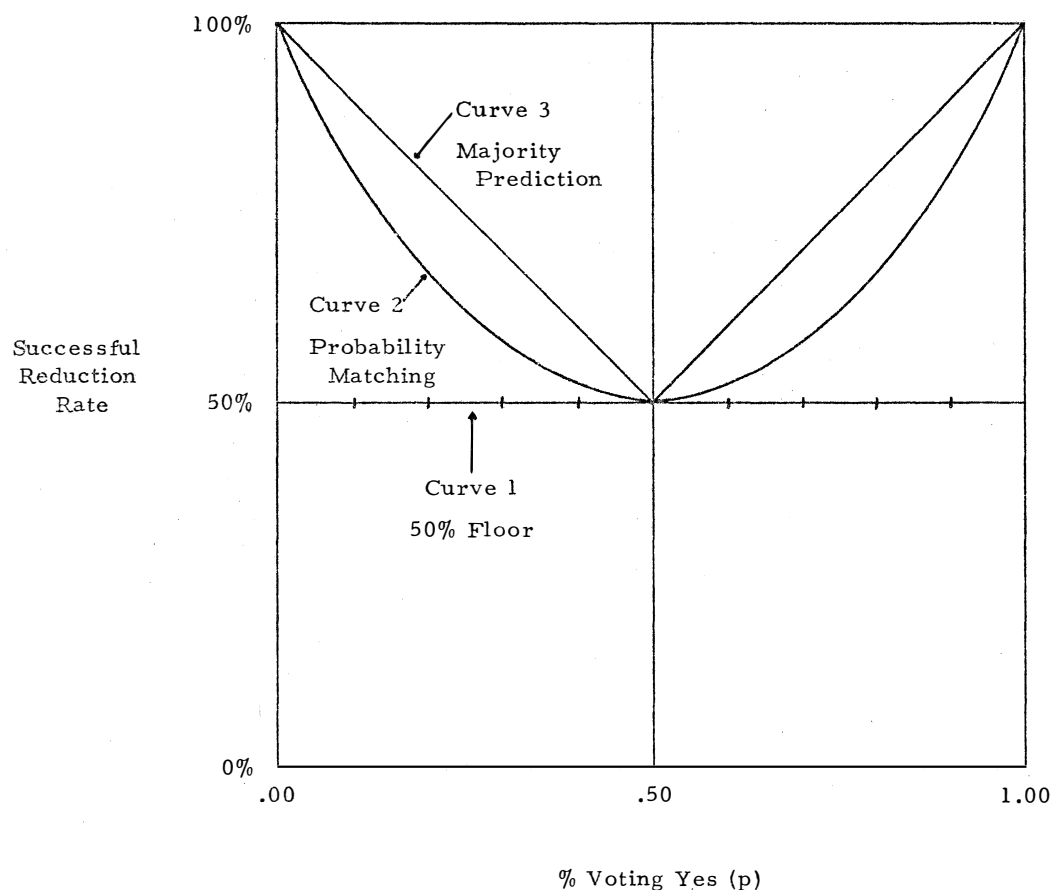
This function has a minimum of 50 percent when p is one-half and increases to one as p approaches either zero or one. Curve 2 of figure 1 plots this function. Clearly the chance prediction can be substantially better than 50 percent if the vote margin is not tight.

Even a better null prediction is available. Say that the majority position on a motion receives p proportion of the votes. Predict that each legislator votes with that majority position. This prediction will achieve p percent success, where p must be at least 50 percent. Thus predicting that the legislator follows the chamber majority is guaranteed to achieve $p (\geq 50)$ percentage success. Curve 3 of figure 1 shows that this prediction is always superior (or identical when $p =$ one-half or one) to the chance prediction developed in the previous paragraph.

These null predictions rest on the tendency of bills to pass with more than a minimal winning majority. Many bills are not seriously contested and pass with little opposition. This is particularly true when constitutional provisions require a record vote on certain types of questions regardless of whether there is any opposition. Other bills benefit from a bandwagon effect when the side which clearly is going to win gains the votes of erstwhile opponents who see no gain in lending their names to a losing cause. Even a straight party-line vote can be predicted with better than 50 percent accuracy if the party sizes are not identical. In short, bills often will pass with more than minimal majorities, so the null prediction level is above 50 percent.

Empirical data on sizes of winning majorities are useful at this point. If most majorities are near minimal in size, then the 50 percent floor is appropriate. But if the average majority is well above minimal, then the null predictability can move to high levels. The first column of table 1 reports the proportion of votes with the

FIGURE 1



House majority for several sessions of the U. S. House of Representatives.² The years have been chosen to permit comparisons with the results reported for some models of House voting and also to provide some historical perspective.

Obviously a high level of predictive success can be attained by simply predicting the member votes with the House majority. This prediction yields 76 percent accuracy over the years 1965-1969. This is far above the 50 percent floor. It also begins to suggest that 80 - 90 percent predictive accuracy might not be at all impressive.

An immediate objection to this analysis is that these data may only reflect the occurrence of unanimous votes. It takes no talent to predict individual votes on a bill which passes unanimously, so such motions should not be included in the figures. Some of the models which have achieved such high predictive success do include unanimous votes in their calculations, but the objection is too serious to argue away. Once a decision is made to drop unanimous votes, a similar argument leads to a decision to delete near-unanimous votes. The real question is how predictable are controversial votes, so an expansive definition of near-unanimous votes is appropriate. The second column of table 1 indicates the proportion of votes which were cast in accord with at least a five-sixths majority of the House. The yearly average from 1965 - 1969 is a hefty 40 percent, so the correction for noncontroversial votes will be sizable.

The proportion of votes cast with the House majority on controversial motions is given in the third column of table 1. This prediction yields an average of 63 percent successful postdiction for 1965-1969.³ This is above the 50 percent floor, but only half as much as the initial 76 percent value when unanimous votes were included. If 63 percent is the null prediction, then 80 - 90 percent predictive accuracy can be impressive. There may be a slight tendency for the proportion of votes

which were cast in accord with the House majority on controversial bills to increase over the time period, but the increase is very trivial.⁴ The fourth column of Table 1 shows the number of roll calls included for each session (or Congress).⁵

The Party Prediction

The models which have been used to predict legislative votes are quite complex. A natural question is what prediction would be possible with much simpler models. The simplest model is one due to the most prevalent result from roll call analysis: the best predictor of roll call voting in the American Congress is party affiliation. The question becomes how good prediction can be obtained using party as the sole predictor. If each member is predicted to vote with the majority of his or her party, can the level of predictive success approach the 80 - 90 percent level?

First, it is appropriate to note that the party prediction can be as low as 50 percent. If each party is split evenly on every vote, then the party prediction would yield only 50 percent accuracy. However, the majority prediction null model developed in the previous section provides even a higher floor for the predictive success of party. The party prediction is identical to the majority prediction when the party majorities are in accord; when the party majorities are in conflict, the party prediction will outperform the majority prediction.⁶ The improvement gained by the party prediction can be ascertained by comparing its success with that of the majority prediction model.

The proportions of votes in accord with the party majority are given in the second column of table 2 for several sessions of the House of Representatives. The average proportion of votes cast with the party majority in 1965 - 1969 was 84 percent. This is a strikingly high figure, particularly since it is in the range which much more complex models have attained.

Voting with party is clearly very high in the House, but it is necessary to temper this observation with the result of the previous section -- voting with the House majority is also high. Indeed the 84 percent successful prediction based on voting with party majority is somewhat less impressive when compared to the 76 percent prediction based on voting with the House majority for the same roll call votes. The first column of table 2 repeats the first column of table 1 to facilitate comparisons of the two models.

A measure of prediction improvement is required at this point. Goodman and Kruskal's lambda provides the appropriate statistic. The denominator is the number of individual votes which cannot be predicted on the basis of the House majority -- the number of votes cast with the House minority. The numerator is how many of those votes can be successfully predicted on the basis of the party majority. This formula can be simplified to the difference in proportion prediction between the two models divided by the complement of the proportion predicted by the majority null model. If party permits an average of 84 percent prediction over the 1965 - 1969 period while the majority prediction is 76 percent, the difference of 8 percent is divided by 24 percent (the complement of 76 percent) to yield a lambda of one-third (plus an allowance for rounding errors).

The third column of table 2 gives the lambda values for each year for the improvement of a party prediction over a majority null prediction. The proportion improvement for 1965 - 1969 is .31. Party definitely permits improvement, but the improvement is not as substantial as might have been anticipated.

Removing the noncontroversial votes has little effect on the conclusions. As column 4 of table 2 indicates, the average success of prediction on the basis of party majority was 76 percent for 1965 - 1969. However when an improvement score is calculated on the basis of the

TABLE 1
House Vote Prediction on the Basis
of House Majority Position

Column:		1	2	3	4
Session and Congress	Year(s)	% Votes Cast with House Majority	% Votes Cast When 5/6 House Majority	% Votes Cast with Less Than 5/6 Majority	Number of Roll Calls
45-all	1877-79	61.9	9.3	58.6	377
62-all	1911-13	68.8	18.9	63.2	262
72-all	1931-33	65.3	19.0	59.1	123
80-all	1947-48	73.2	30.4	64.8	163
85-2	1958	71.9	28.6	62.0	93
86-2	1960	70.5	23.5	62.6	93
87-2	1962	74.2	34.5	63.0	124
88-2	1964	70.6	27.3	61.0	113
89-1	1965	73.6	32.4	63.1	201
89-2	1966	76.5	42.2	61.8	193
90-1	1967	76.4	40.2	63.4	245
90-2	1968	76.4	38.5	64.3	233
91-1	1969	77.9	46.9	63.2	177
91-2	1970	78.6	45.5	64.8	266
	1965-69	76.1	39.8	63.2	1049

TABLE 2
House Vote Prediction on the
Basis of Party Positions

Column:		1	2	3	4	5	6	7
Year(s)		% Votes Cast with House Maj.	% Votes Cast with Party Maj.	Party Lambda	% Controversial Votes Cast with Party Maj.	Party Lambda (cont.)	% Votes Cast with 3-Party Maj.	Three-Party Lambda
1877-79		61.9	84.7	.59	83.7	.60	85.3	.04
1911-13		68.8	85.9	.50	84.3	.53	86.9	.07
1931-33		65.3	79.5	.40	76.3	.42	80.5	.05
1947-48		73.2	85.6	.46	82.7	.50	87.3	.12
1958		71.9	79.6	.27	72.7	.28	82.4	.14
1960		70.5	79.5	.31	74.4	.32	83.5	.20
1962		74.2	85.1	.42	79.7	.45	86.7	.11
1964		70.6	84.1	.46	79.7	.48	85.6	.09
1965		73.6	83.7	.38	77.9	.40	86.7	.18
1966		76.5	85.5	.39	77.5	.41	87.7	.15
1967		76.4	84.5	.34	77.1	.37	87.0	.16
1968		76.4	82.2	.25	73.8	.27	85.0	.16
1969		77.9	82.3	.20	71.4	.22	85.1	.16
1970		78.6	82.3	.17	71.6	.19	84.7	.14
1965-69		76.1	83.7	.32	75.7	.34	86.3	.16

comparable statistics for the House majority (column 3 of table 1), the lambdas are only marginally higher than those found above. The lambdas are given in the fifth column of table 2. The average lambda for 1965 - 1969 is one-third. Party clearly permits a better prediction than the House majority alone, but the increase is substantially less than might have been expected given the usual statements about the importance of party in legislative voting. Indeed these results may be read as indicating a new first principle -- voting with the House majority is of prime importance in predicting congressional votes. The House majority overshadows party when all votes are considered; the two are nearly on par when noncontroversial votes are removed.⁷ But the House majority size must be considered when deciding on the importance of party.⁸

One more possibility must be considered when positing a party model. Some researchers would regard the Democratic party in the House of Representatives as two parties -- one northern liberal party and one southern conservative party. Rather than predict that Democrats vote with the majority of their party, a party prediction would instead predict that they vote with the majority of their regional party. Alternate delineations of the South are possible, but none is clearly optimal. The confederate eleven states are employed for purposes of this analysis.

Table 2 column 6 shows the proportion of representatives' votes with the majority of their party given a three-party system. The three-party analysis permits 85 - 90 percent predictive success, with an average of 86 percent for the 1965 - 1969 period. Column 7 gives the improvement in prediction gained by using a three-party system instead of the two-party scheme. These lambda values are small, averaging .16 for 1965 - 1969. This elaboration of the basic party model results in minimal prediction improvement. Noncontroversial

votes could also be excluded from this analysis, but since they would be excluded from both parts of the lambda calculations the resultant lambdas would not be appreciably higher than those given in column 7.

SIMULATION MODELS

The results obtained in the previous sections emphasize the extent of voting with the House majority plus the increment in voting with the party majority. They can be used to rank order the importance of the House majority, the two-party majority, and the three-party majority, but the results are even more useful for gauging the success of more complex models. When a theory of legislative voting is developed, it is fair to ask how much better it predicts than these simple one-variable null models can predict. With a 1965-1969 average of 76 percent for the House majority model, 84 percent for the two-party majority model, and 86 percent for the three-party majority model, far better than 80 - 90 percent predictive accuracy would be required to view the data as confirming any theory. In this section we compare these null models with two simulations of House voting.

Matthews and Stimson's Cue Model

The Matthews and Stimson (1975) model is based on a cue-taking theory. The theory is that given the large numbers of votes which legislators must cast and given their limited information resources, they will rely heavily on simple cues in deciding how to vote. As a theory this represents an important statement of the nature of legislative voting. It is in accord with much other research, and it would be foolhearted to question the importance of cue-taking in legislative voting. However, the Matthews and Stimson work must be evaluated on three levels -- as a theory, as an operationalized model, and in terms of predictive success. Agreement with the theory does not require acceptance of the operationalization. Weak predictive success can speak more to the operationalization

than to the underlying theory.

Matthews and Stimson postulate nine cues: voting with the majority of the House (defined to be operative when at least two-thirds of the chamber votes together), voting with the majority of the member's party (similarly defined), voting with the Democratic Study Group, voting with the administration, voting with the committee chairman, voting with the ranking minority member, voting with the conservative coalition, voting with the party leadership, and voting with the state party delegation (operative when three-fourths of the members vote together).

A computer program tabulates for each vote which of these predictors the individual member has followed most often on the preceding fifty roll calls. The absence of a cue from a given cue source is not permitted to count against its importance. Negative cue-taking is recognized as well as positive cue-taking. To predict how the member will vote on the instant roll call, the program determines which of the nine cue sources are available for the member, finds which of these available cues the member has voted with (or against) most often on the preceding fifty roll calls (or fewer for the first fifty votes in a session) and predicts that the member will follow that cue source. The results are reported in terms of the proportion of individual votes which the model correctly predicts in each session of the House.

A detailed analysis of this operationalization is unnecessary for present purposes, but a few comments should be made. First, several of the cues involve an element of circularity, as when indicating the House majority cue is available if at least two-thirds of the House votes together, and this circularity is not entirely resolved by simply removing each member of the House from the determination of whether the cue exists when predicting that member's vote. Second, the cue sources are not as developed as empirical work on cue-taking in Congress would suggest. For example, they do not adequately tap the possibility of one member following the cue given by a particular member of the committee

originating the bill, such as from a particular member of the state party delegation, or a particular member of the state party delegation who is on the committee originating the bill. The Matthews and Stimson operationalization is by no means unreasonable, but it is possible to accept a cue approach while rejecting their specific operationalization.

The results of the Matthews and Stimson (1975, table 6-1, p.125) simulation are given in the first column of table 3. Note that the 1965 - 1969 results are based on the specific model described here while results for earlier years are based on a slightly different though similar model. The 88 percent predictive success for 1965 - 1969 is impressive, particularly in that this model involves a prediction of all votes across all subject domains. At this point, however, the results of the previous sections become relevant.

The success rate of the Matthews and Stimson model is above that of the majority null model and of the party null models. The 1965 - 1969 average represents .50 improvement over the majority null model, .27 improvement over the two-party model, and .13 improvement over the three-party system null model. The model clearly outperforms the most simple null model but does not bite very deeply into the votes which party cannot predict. The data analysis does not substantiate the cue theory as much as might be expected given other research on the importance of cues in legislative voting. The difficulty is likely in the operationalization. But what is important to realize is that the 88 percent predictive success is not strong confirmation of the theory but rather mild improvement over simple null models.

Part of the high success rate is that the model is being used to predict noncontroversial as well as controversial votes, and the noncontroversial votes must necessarily inflate the measure of success. Recomputation of the success rate based on the assumption that they can predict perfectly all votes which are noncontroversial (a House majority of five-sixths or more) leads to an estimate of the model predicting

80 percent of the votes correctly on controversial votes from 1965 to 1969.

If that assumption is false, their model would be predicting more than

80 percent of the controversial votes correctly.⁹

Cherryholmes and Shapiro's Two-Phase Model

More deserves to be said about the Matthews and Stimson model, but it can be said after a consideration of the Cherryholmes and Shapiro (1969) simulation. Cherryholmes and Shapiro wrote a McPhee-type simulation of legislative voting, with a predisposition and a conversation phase. In the first phase, region, party, and other variables are used to give each legislator a predisposition for each bill. For example, the legislator is given a score of +1 if he or she is from the same party as the bill's sponsor. If the summed predisposition is extreme (at least +2 or -2), the member is predicted to vote accordingly. Otherwise, the legislator enters a conversation simulation. The legislator is assigned a probability of conversations with all other legislators (based on such factors as whether they are of the same party, the same region, the same state, and so on) and those conversations occur probabilistically with each conversation which takes place having an incremental effect on attitude change. The sum of the predispositions of the members with which the given member converses is averaged with the member's original predisposition to obtain a final predisposition on each motion. The member is predicted to vote yes if this final predisposition is positive, no if it is negative, and abstain if it is zero.

As with the Matthews and Stimson model, the Cherryholmes and Shapiro simulation can be analyzed at three levels: its theory, its operationalization, and its predictive success. The theory is that some members have strong positions on motions and can vote accordingly with no difficulty while others have weaker positions and therefore are amenable to infl from others or at least to information communicated by others.

TABLE 3

House Vote Prediction by Matthews and Stimson Simulation

Column:	1	2	3	4
Year(s)	% Votes Predicted by Matthews and Stimson Model	House Majority Lambda	Two- Party Lambda	Three- Party Lambda
1958	85.7	.49	.30	.19
1960	86.0	.53	.32	.15
1962	89.3	.59	.28	.20
1964	87.7	.58	.23	.15
1965	89.2	.59	.34	.19
1966	89.5	.55	.28	.15
1967	88.6	.52	.26	.12
1968	86.5	.43	.24	.10
1969	86.7	.40	.25	.11
1965-69	88.1	.50	.27	.13

The theory can be interpreted as an influence model or as an elaborate cue model. In either case the theory itself is not unreasonable.

Questions can be raised about the operationalization.

Cherryholmes and Shapiro had to decide how many points being from the same party as the bill's sponsor was worth, what probability of a conversation resulted from being from the opposite party of a given member of the House, and so on. They may have based their decisions on the best research in the area, but the fact is that the research in the area is weak and does not deserve to be taken too literally. They indicate their results do not depend on the precise values they chose, but to argue that the values are immaterial would just reinforce the argument of the present paper that legislative votes are inherently predictable regardless of one's model. It may not be fair to be too picky about the exact values they chose since clearly they had to make some decisions in operationalizing their model and later research can refine the values they chose; but this does not mean that their operationalization must be accepted on good faith alone.

Cherryholmes and Shapiro apply their simulation to two sets of votes -- votes on federal role legislation and foreign aid in 1963 - 64. They achieve 84 percent predictive success in both areas. This is a high prediction rate, but it must be compared to the null models developed above to decide how strong support this provides to their theory.

Cherryholmes and Shapiro report predictions based on pure party voting in their federal role analysis with only a 6 percent drop in predictive success. Actually, however, party was coded in their predisposition phase for only twenty of the twenty-one bills and the figure they report amounts to predicting correctly 0 percent of the votes on that twenty-first bill. If the party null model were employed on only the twenty bills on which party was coded by Cherryholmes and Shapiro, 82 percent predictive success would be achieved.

Another decision consistent with the lack of partisan sponsorship of that twenty-first bill and their handling of bipartisan sponsorship would be to predict that everyone votes for passage of that bill. In that case, 82 percent could be predicted on the basis of party, and that includes a prediction that all southerners voted for the passage of the 1964 Civil Rights Act -- an absurd prediction which would be eliminated if we used a three-party system null model. The party model leads to 83 percent predictive success on the foreign aid votes. Thus the simulation does only 1 - 2 percent better than a straight party prediction. This is very weak evidence in support of the model.

Cherryholmes and Shapiro do try to demonstrate that party is not the reason for the success of their predictions. They delete party from their predisposition phase and find only a 6 percent drop in predictive accuracy on federal role and 11 percent on foreign aid (3 percent of which is due to one of the twenty-seven votes being predicted for only eighteen congressmen). This would seem to show that their predisposition-conversation process yields successful predictions even with party effects removed. However, party is too pervasive in their simulation to be removed in such a simple manner. Region correlates with party. Similar constituencies tend to select members from the same party. These factors are included in their simulation, so removal of party from the predisposition phase does not eliminate all of the effects of party. Indeed party effects permeate the communication phase. At one point they give each rank-and-file legislator a .01 probability of discussions with rank-and-file members of the opposition party and a .04 probability of discussions with rank-and-file members of their own party. Not only does this difference remain when party is dropped from the predisposition phase, but many of the other determinants of conversation probabilities are correlated with whether the other legislator is from the same party as the member, so the within-party conversations will be far more than four times as

likely as between-party conversations. This in turn means that the conversations phase reintroduces the party effects which were deleted from the predisposition phase. In short, their model is highly laden with party effects, and the test they report on deleting party does not demonstrate that their model succeeds for reasons other than party.

Evaluative Criteria

My evaluations of the Matthews and Stimson and the Cherryholmes and Shapiro simulations are similar. Their theories are highly reasonable. Their operationalizations can be challenged. Other operationalizations might provide stronger support for their theories. Therefore I would not consider rejecting these theories on the basis of the empirical tests. But neither do I regard the empirical tests as verifications of these theories. The extent of fit is considerable, but too much of the predictive success can be accounted for by simplistic one-variable null models. The success seems impressive only until one realizes the inherent predictability of legislative votes.

Yet it would be an injustice to both sets of authors to stop here without a more complete discussion of the criteria for model evaluation. Statistical fit is a weak criterion. Statistical improvement over the appropriate null model is a better criterion, and neither model achieves high marks here. Parsimony is another criterion frequently suggested; particularly relevant is parsimony in the sense of high statistical success with few predictors. The Cherryholmes and Shapiro simulation employs so many variables that it immediately fails a parsimony test. The Matthews and Stimson model involves nine cue sources but does only marginally better than a three-party null model, a performance that must be considered weak in regard to parsimony. But these are all statistical criteria, and the models both look better when non-statistical criteria are employed.

The models do not just try to predict legislative votes but to model the voting process. No one would seriously suggest that any of the null models has any verisimilitude to the legislative voting process, but these two simulations clearly try to cope with part of the complexity of that process. Their verisimilitude ratings may not be perfect, but such ratings would be infinitely higher than those of the null models. These are theories and simulations of processes, so more than statistical criteria are relevant.

This can be expressed far more pointedly. The null models show that there is a high level of voting with the House and the party majorities, but they do not suggest why that is the case. Why do so many votes cast with these majorities? What process leads to such voting? For example, what does party really mean here? It includes pressures from party leaders. It includes pressures from constituents from the member's party. It takes advantage of the tendency of members from the same party to have similar attitudes on most issues. It includes the pressure for members of the President's party to accede to his wishes in their votes. It is reinforced by the tendency of conversations and cues to be within party, and that can be very important in a low information setting. Party includes elements of ideology. The member's staff tend to push him or her in the party direction since the staff will tend to be of the same party as the member. As Greenstein and Jackson (1963) argued long ago so very well in their reply to Crane (1960), party pressure is a very complex phenomenon composed of many individual elements. The null models only aggregate these several influences. The simulations propose a theory as to how these separate influences operate in the voting process. Party is an excellent predictor, but these simulations function better as explanations of that party prediction. The term "explain" has been avoided until now, for the null models in no serious way explain legislative votes. The

simulations attempt explanation of the votes, and they may actually help explain how the House majority and party majority null models achieve their considerable success.

Better theories of legislative voting, better models of the voting process, and better explanations of individual votes may be possible. What is important is to realize that these are the relevant grounds for assessment of the simulations. Their predictive accuracy does not validate them; their lack of parsimony does not invalidate them. How useful they are is the ultimate question and that is not statistical. At this point, however, it becomes relevant to move to other proposed models of legislative voting. Once statistical criteria are eliminated, all theories become more nearly equal and the simulation mystique becomes irrelevant.

NONSIMULATION MODELS

We can therefore turn to two important theories of Congressional voting which are not based on simulation studies: Clausen's How Congressmen Decide (1973) and Kingdon's Congressmen's Voting Decisions (1973). The flavor of both can be given without the amount of detail that was required for the simulations.

Clausen's Long-Term Model

Clausen's analysis is based solely on statistical analysis of the roll call votes. He examined voting in selected policy domains in recent Congresses. One policy dimension is found in each policy domain, though the technique could find (and in somewhat later Congresses [Clausen, 19] has found) more than one policy dimension per domain. No overall statistical measure of fit is provided. However, the procedure of cluster analysis of Yule's Q coefficients with a minimum value of .7 is roughly equivalent to Guttman scaling with a reproducibility

requirement of about .9 or perhaps a little less. The reproducibility notion is similar to that of predictive success, so one would assume that the analysis is equivalent to at least 85 percent predictive success on the votes included and at least 80 percent predictive success on the votes in the policy domains (since some votes in each domain would be excluded from the dimension). Thus the predictive success is likely to be in the same area as that of the simulations reviewed above.

Clausen scores the legislators on each of the policy dimensions. He finds these scores correlate highly across time, showing continuity of policy dimensions but also showing a substantial long-term element to legislative voting. Party is a very effective predictor of position on some of the policy dimensions. Constituency influence is evident on some other dimensions. Presidential pull can be seen in still other areas. A core of consistent liberals and conservatives is evident across the policy domains, particularly when civil rights and international involvement are excluded from consideration. Thus long-term ideology, party, constituency, and presidential support considerations result in members adopting long-term positions on legislative policy.

Kingdon's Short-Term Model

Kingdon's analysis is based on interviews with selected congressmen immediately following their votes on specific motions. He asked them about whether they paid attention to any fellow congressmen, to the party leadership, to their staff, to constituents and mail, to the administration and executive branch, to organizations, and to anything they read. Kingdon concludes that there is a "consensus mode" of congressional decision making. The field of forces includes fellow congressmen, party leadership, staff, constituency, administration, and interest groups. Not all of these elements may be operative and not all of the operative elements may be relevant to the

congressman. The congressman can just follow the herd if there is no opposition on the bill, and can follow the consensus if his or her relevant field of forces has a consensus position. Without attempting prediction in those instances where a consensus position is lacking, Kingdon can achieve 89 percent successful prediction on the individual votes he investigates with the consensus model. Again this is within the prediction level of the simulations. He could have achieved higher prediction by predicting the member would vote his own attitude, but he properly avoids that prediction since the own attitude measure was obtained after the vote and so is likely to exaggerate agreement with vote.

Kingdon determines the relative importance of specific elements of the field of forces, and he carefully documents the operation of each. Fellow congressmen emerge as most important, clearly supporting their role in the simulation models. Constituency ranks second, with party leadership and interest group influence vanishing when the other factors are controlled. The discussion tells much about the operation of short-term influences on legislative votes. Regardless of the congressman's long-term position on an issue area, the specific vote must be located by the congressman relative to the underlying policy dimension. Fellow congressmen provide the most important short-term orienting cue, but with a hefty influence from constituency.

Evaluative Criteria

Neither Clausen nor Kingdon claim to have improved on the 80 - 90 percent predictive accuracy of the simulation models. Nor would either be expected to yield better improvements over the null models than that found for the simulation models -- except that Clausen can show that in some policy domains party is completely irrelevant and that both eliminated noncontroversial legislation from consideration. Yet the argument has been that nonstatistical criteria are of prime importance.

Both Clausen and Kingdon provide satisfying theories of congressional voting. It would be unjust to both to minimize their differences, but they can be combined in a useful manner. Clausen clearly focuses on the long-term element of the policy dimension while Kingdon moves to the short-term aspect of the individual roll call. Long-term dimensions do not suffice as an explanation by themselves since they tell nothing of the process by which the member locates the motion on the policy dimension. Yet a strictly short-term analysis would miss the powerful element of continuity in the system.

MODEL CONSTRUCTION

The remaining, and most important, question is how a model of legislative voting should be constructed. The separate elements have all been studied, but how should they be combined?

A Time-Based Model

The first observation is that time must be intrinsic to such a theory.¹⁰ Legislative voting is longitudinal, is dynamic, and is incremental. The individual votes are not independent events but are replications of decisions which the member has made earlier. Legislators continually confront the same questions, and this must be taken into account. The member need not follow his or her voting history, but that history clearly provides the element of continuity. Sources of change can be evaluated in terms of how they deflect that voting history. The effects of changes in the decisional context on legislative voting would be fascinating to study, but that requires holding the elements of continuity constant.

Additionally, time should be built into such a theory by including predictors at different levels of priority. There are long-term policy dimensions, ideology, party, and constituency pressures.

There are short-term influences from fellow congressmen and constituency. Neither long-term nor short-term predictors should be excluded. Some extremely long-term sociological and constituency characteristics are so stable that they cannot explain voting changes across time and therefore might best be omitted from the model. At the opposite end, some extremely short-term communications networks are basically a topic for communications research and hence might best be omitted from the model. Advice from friends and spouse are not considered relevant when determining the relative importance of party, candidates, and issues in affecting voting at the level of the mass electorate. Similarly, cue sources and advice from fellow congressmen might be how the actual decisions are made but that only shifts the question back one level to why those particular cue sources and fellow congressmen were chosen for the communication and how were their predispositions determined. Mapping out the communication process is not identical to assessing the relative importance of party, constituency, presidency, and ideology. The short-term elements cannot be ignored, but more than communications research is desired. Study of the campaign to pass the bill should not accidentally lose sight of the political aspects of the campaign.

The simulations studies can be reviewed in this light. The Matthews and Stimson model is supported by other research documenting the importance of cues in congressional voting. However, their cue approach is too short-term to be political until they analyze the structure of the cues. Stimson (1974) has reported a factor analysis of the cues indicating three types of cues -- party (party leaders and party majority), ideology (Democratic Study Group, conservative coalition, and ranking member), and consensus (committee chairman and House majority) factors. If this analysis of cue structure can be built into a hierarchical model of long- and short-term influences, then their model would be of greater interest than if it remains solely at the short-term level.

By contrast, the Cherryholmes and Shapiro distinction between predisposition and conversation phases emulates the long-term, short-term distinction. The predisposition phase may merit a heavier dose of the long-term policy dimension (which they term "memory") and the conversation phase may require some organization into a smaller number of types of cue sources, but the basic organization of the model is satisfying. The operationalization may require improvement, but the form of the theory is worth using as a base for theory construction.

Research Agenda

The temporal distinction also suggests further research directions. A longitudinal analysis of the importance of voting history is warranted and is under way (Asher and Weisberg, 1975). Additionally a residualization approach should be attempted. Given a differentiated model, the independent impact of separate elements should be assessed once previous elements are removed. The effects of party should be studied when the House majority size is controlled. The policy dimension position can be held constant for a study of voting with party leadership. The field of forces can be held constant to study the use of fellow congressmen as cue sources.

Additionally deviant voting merits study. If conformity to the House and party majorities is the norm, deviation merits study. In 1965 - 1969 only 11 percent of the votes were against both the House and two-party majority and only 8 percent were against both the House and three-party majority. This amount of deviant voting is about the level of predictive failure by the simulation models. Can these models explain the deviant votes, or are these the votes which the simulations do not explain and what would be required to explain them? A focus on deviation voting may be required if substantial improvement in predictive success is to be attained.

CONCLUSIONS

Most social science fields would be very satisfied with 80 - 90 percent successful prediction. This level has been achieved in the roll call analysis area, but with the sobering realization that it does not validate any single theory of legislative voting.¹¹ Instead, legislative votes are inherently predictable, with 76 percent achieved by simply predicting the person following the chamber majority, 84 percent by predicting the person following the party majority, and 86 percent by predicting the person following the three-party system party majority. Simulations obtaining 88 percent predictive success on all votes and 84 percent success within selected issue areas do not appear successful in this light, particularly given the large number of predictors they employ for their slight improvement on the null models.

This emphasizes the importance of contrasting roll call predictive success with that of simple null models, but it also shifts the decision between theories from statistical to nonstatistical grounds. Verisimilitude to the process being modeled is desired as is an explanation of why the simple House majority and party majority models are so successful. Finally a good theory must make a careful distinction between long-term and short-term elements and must include both in its purview. Excellent studies of both are available. They can be read as complementary, but a theory should combine them. The theory should avoid extremely long-term elements and should not rely exclusively on extremely short-term communications factors. The Cherryholmes and Shapiro simulation suggests the appropriate structure, while the Matthews and Stimson simulation emphasizes the role of cues. Studies of voting history, of effects of variables when prior variables are controlled, and of deviation voting would be useful in extending the basis for such a theory.

Legislative voting is one of the most intensively studied areas of quantitative political science. Many have assumed that the basic answers were discovered long ago. Others will interpret the recent research as filling in "everything they always wanted to know about legislative voting" and (often) didn't care to ask. But the challenge of the field remains. The fifteen percent of the votes which cannot be predicted by a single predictor model still have not been predicted. And, more importantly, the field lacks the organizing theory by which to assemble all the separate elements which have been studied. This review essay suggests the nature of the required organizing theory, but detailing this outline is for the future.

FOOTNOTES

1. Predict that the member always votes affirmatively. If p is the proportion of members supporting the motion, this prediction will be wrong $1 - p$ percent of the time. Try a second round of predictions in which every member is predicted to vote negatively; this will be wrong p percent of the time. If the two prediction systems are used randomly, in the long run the first will be used half the time for $1/2(1 - p)$ errors and the second will be used randomly for $1/2(p)$ errors. The expected number of errors will then be $1/2(1 - p) + 1/2(p) = .50$.
2. The unit of analysis for all percentages in the tables in this paper is the individual vote. For example, if there were 266 roll calls taken in 1970 and 435 congressmen that year, there are $266 \times 435 = 115710$ possible cases less the missing data absences, for a total of 93741 cases. These data were made available by the Inter-university Consortium for Political and Social Research which bears no responsibility for the interpretations reported here.
3. Koehler achieves a similar result in analyzing the average size of winning majorities. He has analyzed the 3049 roll calls taken in the twenty-six sessions of the House of Representatives from 1943 - 1968. Of those, he considered 30 percent uncontested since the majorities were at least 85 percent. The mean size of the winning majority on the remaining contested votes was 63.5 percent. (Note that this is not the same as computing the proportion of individual votes which were cast with the House majority as is done in this paper, since the two calculations treat abstentions

differently.) Extrapolation based on the data Koehler reports suggests that the mean majority on all votes was approximately 73 percent.

4. Nearly all of the increase in the first column of table 1 was due to the increase in the proportion of noncontroversial votes.
5. There has been an obvious increase in the amount of voting (at least since the present size of the House stabilized in this century). This has been partly an increase in the number of noncontroversial votes (more than quadrupling from 1958 to 1970), but also reflects a real increase in the number of controversial votes (nearly doubling from 1958 to 1970). The number of controversial votes has been increasing, but with minimal shifts in the proportion of members voting with the House majority on those votes.
6. Let the number of Republicans voting yes be labeled \underline{a} , the number voting no be labeled \underline{b} , the number of Democrats voting yes be labeled \underline{c} , and the number of Democrats voting no be labeled \underline{d} . Say that a majority of Republicans vote yes ($a > b$) while a majority of Democrats vote no ($c < d$). The sum of the party majorities is $\underline{a} + \underline{d}$. The House majority is either $\underline{a} + \underline{c}$ if the bill passed (which is less than $\underline{a} + \underline{d}$ since $\underline{c} < \underline{d}$) or $\underline{b} + \underline{d}$ if it failed (which is less than $a + d$ since $\underline{a} > \underline{b}$). In either case, the House majority is less than the sum of the party majorities.
7. It is difficult to contrast the importance of House majority with other predictors since no realistic predictor can do less well than a prediction based on the House majority. An appropriate comparison is to contrast the lambda showing the improvement

over the House majority prediction with another lambda -- this one showing the improvement of the House majority prediction over the 50 percent floor. When all votes are included, the average results for 1965 - 1969 are that the House majority prediction provides an improvement of 52 percent over the floor, while the party model has an improvement of only .31 over that. When only controversial votes are included, the House majority prediction provides 27 percent improvement and the party model adds .33 improvement over that.

8. Time trends show up starkly in columns 4 and 5 now that non-controversial votes are removed. There has been a decline in the extent of voting with party. Votes with the House majority on noncontroversial motions obscured this shift in column 2, but it is very clear in column 4. The lambda values reinforce the original statements about the decline in the importance of party. By 1969 and 1970 party has lost much of the traditional importance accorded to it. In 1970, for example, 65 percent of the controversial votes were with the House majority, 30 percent above the 50 percent prediction floor. The improvement of the party prediction over the House majority prediction is only .19. Not only must the House majority size be considered when deciding on the importance of party, but the House majority predictor may be more powerful than the party predictor.
9. To remove possible effects of lopsided majorities, Matthews and Stimson (1975, pp. 134-35) report a test of their model on the core of closely contested votes. These are the votes where the winning side had less than 66 percent of the votes, but with the first twenty-two roll calls of each session dropped to minimize

the problem of predicting early votes on the basis of too few previous votes. They obtained 85.2 percent predictive accuracy on the 320 core votes in a five-year period.

10. This discussion builds on Asher and Weisberg (1975).
11. Studies of mass voting behavior are beginning to find themselves in the identical situation. Predicting dichotomous behavior is too easy to be useful in theory confirmation.

REFERENCES

Asher, Herbert B. and Weisberg, Herbert F. "A Dynamic Theory of Congressional Voting: Change Amidst Stability." Mimeographed. Pasadena, Calif.: California Institute of Technology, 1975.

Cherryholmes, Cleo H. and Shapiro, Michael J. Representatives and Roll Calls. Indianapolis: Bobbs-Merrill, 1969.

Clausen, Aage R. How Congressmen Decide. New York: St Martin's, 1973.

Crane, Jr., Wilder. "A Caveat on Roll-Call Studies of Party Voting." Midwest Journal of Political Science 4 (1960): 237-49.

Greenstein, Fred I. and Jackson, Elton F. "A Second Look at the Validity of Roll-Call Analysis." Midwest Journal of Political Science 7 (1963): 156-66.

Kingdon, John W. Congressmen's Voting Decisions. New York: Harper and Row, 1973.

Koehler, David

Matthews, Donald R. and Stimson, James A. Yeas and Nays. and Nays. New York: Wiley, 1975.

Stimson, James A. "Five Propositions about Congressional Decision-Making." Prepared for the Seminar on Mathematical Models of Congress, Aspen, Colorado, 1974.